TRANS WORLD COMMUNICATIONS, INC.

PS1000 and 500 SERIES
POWER SUPPLY

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WARRANTY

Trans World Communications, Inc. (TWC) warrants that new TWC equipment has been manufactured free of defects in design, material and workmanship. If the equipment does not give satisfactory service due to defects covered by this warranty, TWC will, at its option, replace or repair the equipment free of charge.

The warranty is for a period of 90 days from the date of installation. In the event that the equipment is not installed within 90 days of factory shipment, satisfactory evidence of the installation date must be submitted.

LIMITATIONS:

This warranty does not cover physical damage caused by impact, liquids or gases. Defects caused by lightning, static discharge, voltage transients, or application of incorrect supply voltages are specifically excluded from this warranty.

RETURN OF EQUIPMENT - USA:

The equipment shall be returned freight prepaid to the Service Department, Trans World Communications, Inc., 240 Pauma Place, Escondido, California 92025. The equipment should be packed securely, as TWC will not be responsible for damage incurred in transit. Please include a letter containing the following information:

1. Model, serial number, and date of installation.
2. Name of dealer or supplier of equipment.
3. Detailed explanation of problem.
4. Return shipping instructions.

TWC will return the equipment prepaid by United Parcel Service, Parcel Post or truck. If alternate shipping is specified, freight charges will be made collect.

RETURN OF EQUIPMENT - FOREIGN:

Write for specific instructions. Do not return equipment without authorization. It is usually not possible to clear equipment through U.S. Customs without the correct documentation. If equipment is returned without authorization, the sender is responsible for all taxes, customs duties and clearance charges.

LIMITED PARTS WARRANTY:

This warranty shall cover all parts in the equipment for a period of 12 months from the date of installation, subject to the previous conditions and limitations. The parts will be replaced free of cost. The labor charges will be made at the current TWC hourly service rate.

PARTS REPLACEMENT:

If it is not practical, or the purchaser does not want to return the equipment to the factory, this warranty is limited to the supply of replacement parts for a period of 12 months from the date of equipment installation. The following instructions for the supply of replacement parts should be followed:

1. Return defective parts prepaid to: Parts Replacement, Trans World Communications, Inc., 240 Pauma Place, Escondido, California 92025.

2. Include a letter with the following information:
    a) Part number(s).
    b) Serial number and model of equipment.
    c) Date of installation.

Parts returned without this information will not be replaced. In the event of a dispute over the age of the replacement part, components date coded over 24 months prior will be considered out of warranty.

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SECTION 1
GENERAL INFORMATION

1.1 GENERAL

The PS1000 and 500 series of heavy-duty power supplies are all based on a 1200 VA ferroresonant transformer.

For those users unfamiliar with ferroresonant transformers, this is a type of "constant-voltage" transformer which has been used widely in the electronics industry for many years. It finds application where a very high-reliability moderate-precision source of ac or dc power is required.

The ferroresonant transformer, as the name implies, has a winding which, when associated with an external capacitor, resonates at the supply frequency. The stored energy in this resonant circuit is such that a section of the transformer core (the magnetic shunt) is totally saturated by the magnetic flux so caused. The magnetic flux passing through the secondary of the transformer is limited in this way so that the maximum value it reaches in either magnetic direction is "clamped" at the saturation value. This results in a secondary voltage which is substantially square in waveform and is largely independent of either the primary voltage or the current being drawn from the secondary.

This set of conditions is maintained as long as the resonant winding has enough stored energy to maintain magnetic saturation. If too much energy is drawn from the secondary, saturation no longer takes place, no further secondary energy is available, and the transformer is said to be in the "folded back" condition.

In this way the transformer becomes self-protecting against catastrophic overloads.

Three further comments are appropriate in any discussion of ferroresonant transformers.

Temperature

Ferroresonant transformers have very high circulating currents flowing in the resonant winding under no-load conditions. For this reason, case temperatures of approximately 100° C are considered normal for transformers of the size and construction used in the series of power supply under discussion.

Noise

Some mechanical noise, due to magnetostrictive effects in the core material and to minute physical movement of the core components, should be expected.

Magnetic Field

The magnetic fields surrounding ferroresonant transformers are considerably larger than those present in the immediate vicinity of conventional transformers. Care should be taken not to route sensitive audio leads or other field-sensitive components close to transformers of this class.

1.2 PS1000/500 POWER SUPPLIES

The PS500 uses a single ferroresonant transformer. The PS1000 uses two ferroresonant transformers and two sets of PS500 components connected in parallel sets to provide twice the output current.

1.3 TECHNICAL SPECIFICATIONS

The technical specifications for the power supplies appear in Table 1.

TABLE 1.
Technical Specifications.

PS500 (single)	
PRIMARY VOLTAGE:	115/230 ±10 % (jumper selectable).
PRIMARY CURRENT:	6 A (230 V), 12 A (115 V).
FREQUENCY:	50 Hz/60 Hz (jumper selectable).
DC OUTPUT VOLTAGE:	28-33 VDC (5-40 A).
MAXIMUM RIPPLE:	1 V PEP at 40 A.
SIZE:	48.26 cm W X 21.59 cm D X 22.23 cm H.
WEIGHT:	35.83 Kg.

PS1000 (Double)	
PRIMARY VOLTAGE:	115/230 ±10 % (jumper selectable).
PRIMARY CURRENT:	12 A (230 V), 24 V (115 V).
FREQUENCY:	50 Hz/60 Hz (jumper selectable).
DC OUTPUT VOLTAGE:	28-33 VDC (10-80 A).
MAXIMUM RIPPLE:	1 V PEP at 80 A.
SIZE:	48.26 cm W X 43.18 cm D X 22.23 cm H.
WEIGHT:	58.97 Kg.

SECTION 2
UNPACKING AND INSTALLATION

2.2 UNPACKING AND INSPECTION

Unpack the supply and inspect for physical damage. Check that all parts on the shipping list are present before discarding the packing materials. Remove the equipment bottom plate and ascertain that the connections for voltage and frequency are correct for the area in which the supply will be operated. Check also that the correct fuse or fuses are installed. In some configurations two fuses are used in parallel. Check the schematic for fuse information.

NOTE

There are three transformer windings which must be correctly configured. Check the schematic diagram if any doubt exists as to the correct connections.

2.3 TRANSFORMER CONNECTIONS

Please refer to Figures 1 thru 4 for the correct transformer connections. If all the connections are correct the power supply is ready to operate.

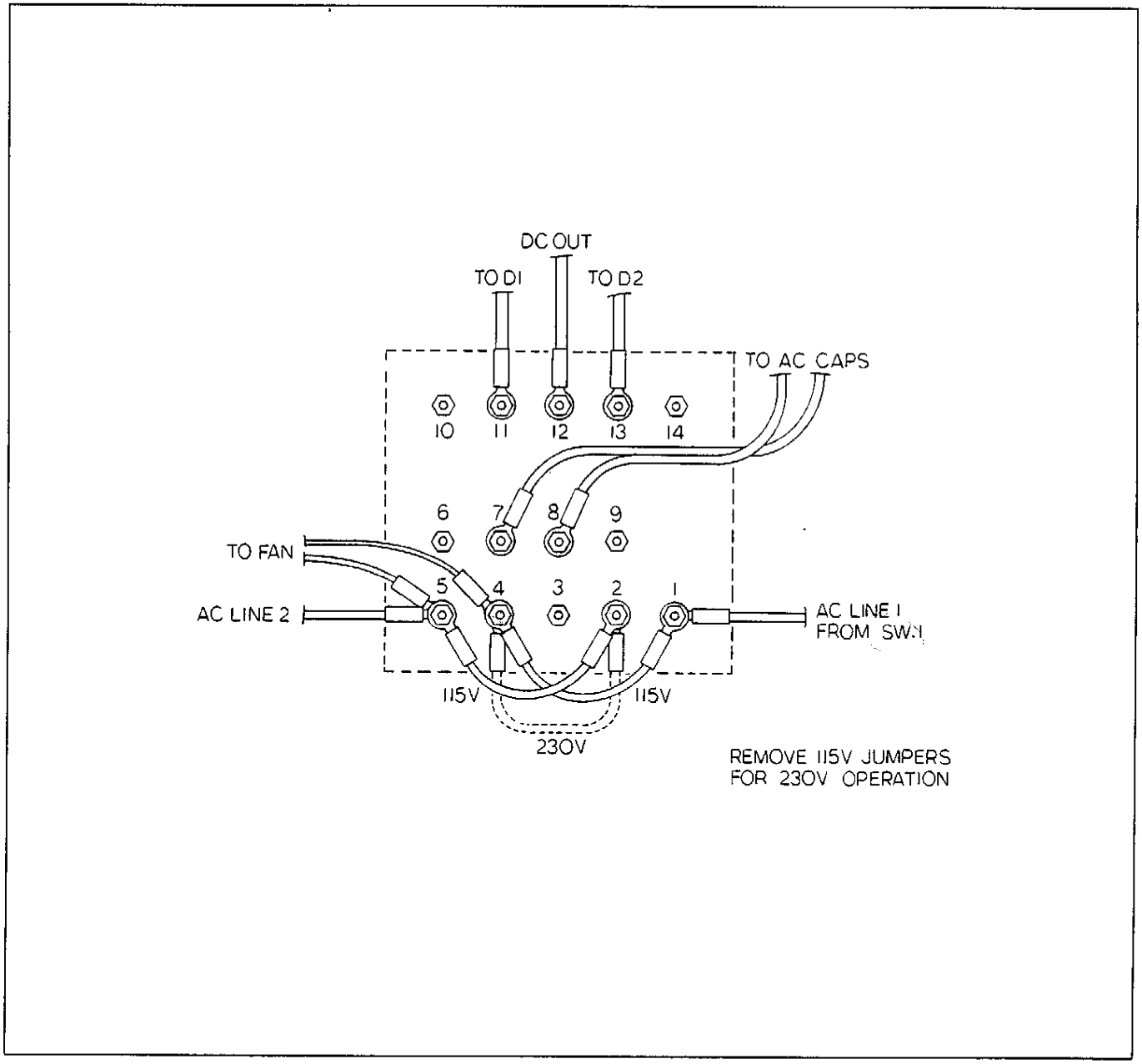

FIGURE 1.
Transformer Connections, PS500 115/230 V, 60 Hz.

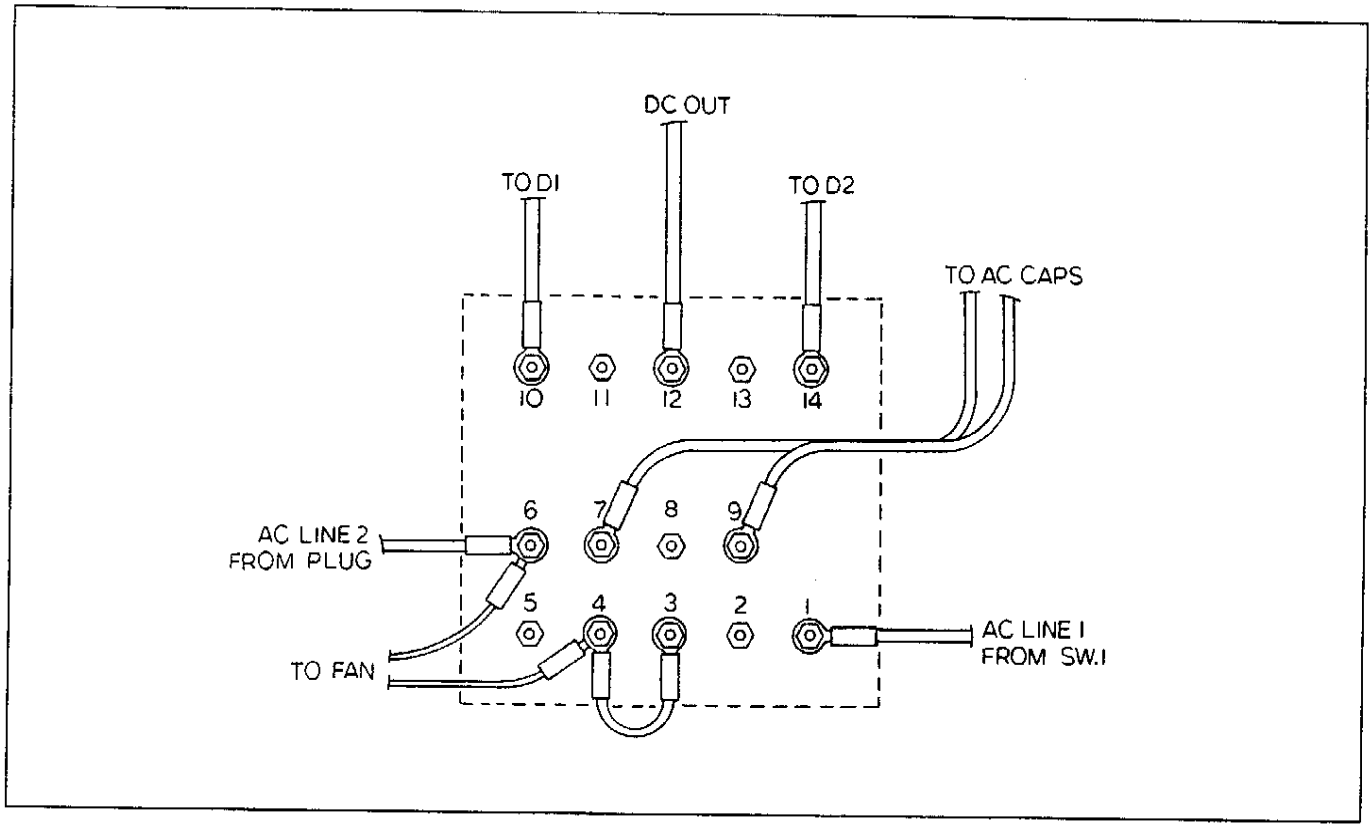

FIGURE 2.
Transformer Connections. PS500, 230 V, 50 Hz.

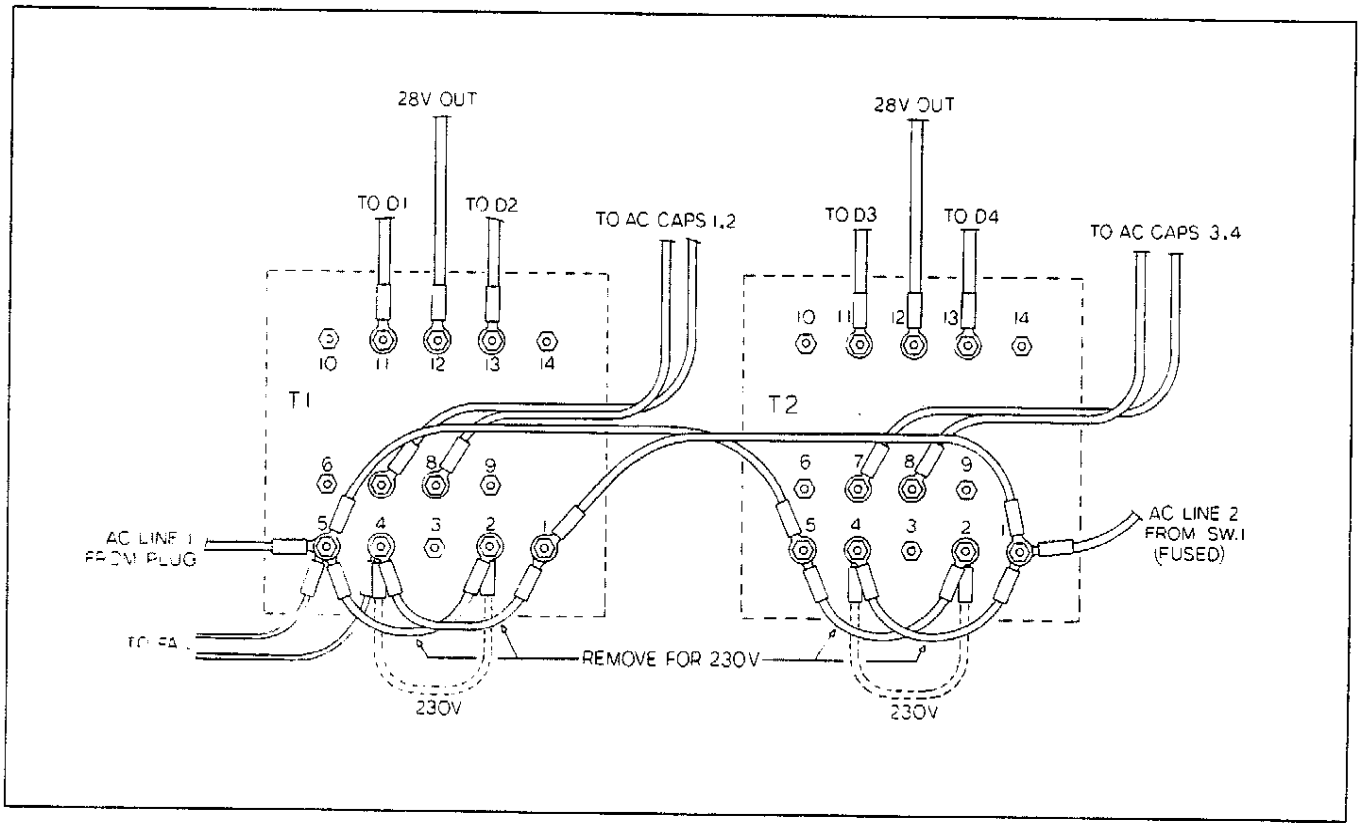

FIGURE 3.
Transformer Connections, PS1000, 115/230 V, 60 Hz.

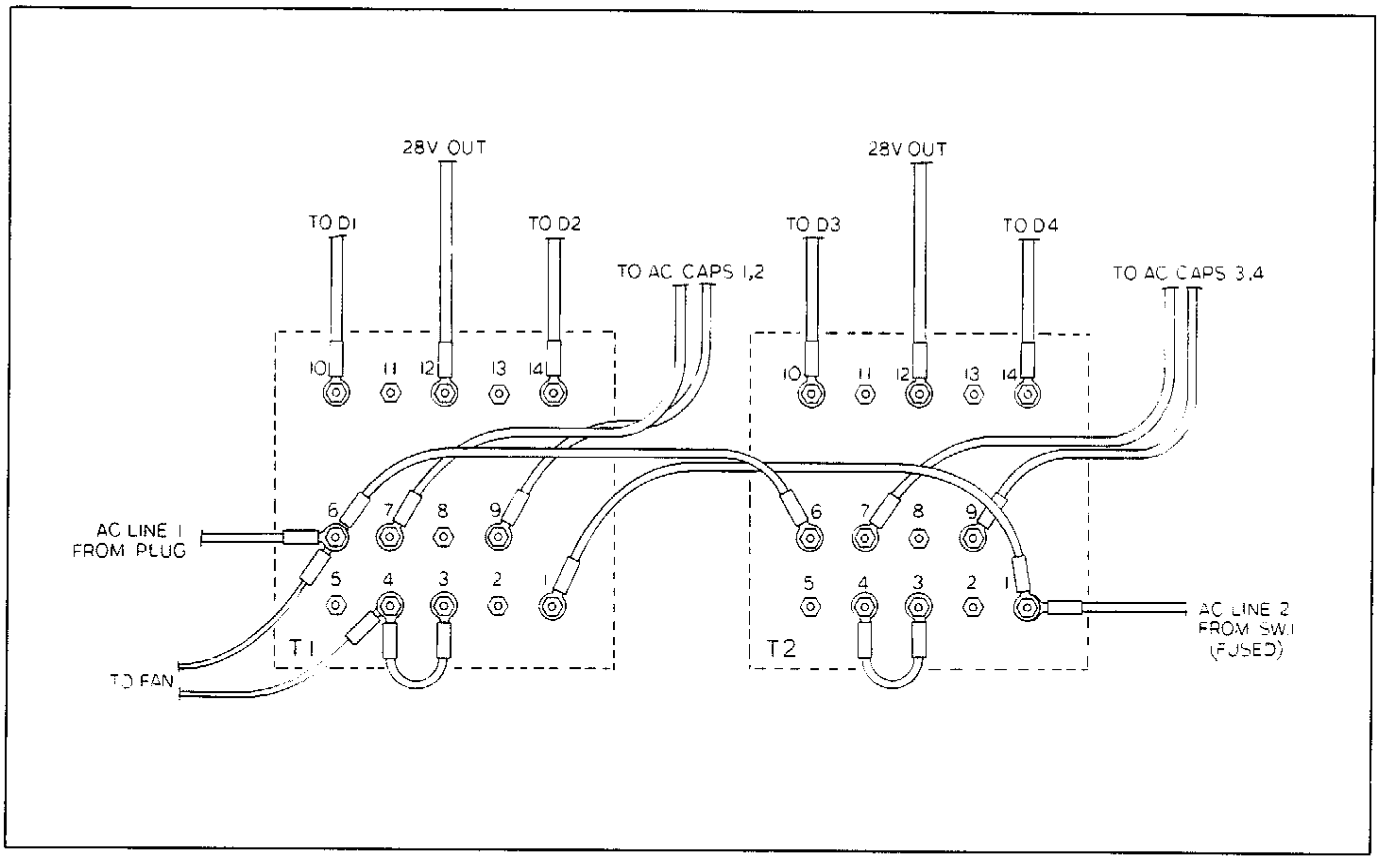

FIGURE 4.
Transformer Connections, PS1000, 230 V, 50 Hz.

NOTE :

1. CONNECTIONS SHOWN ARE FOR 230V–50Hz SUPPLY
2. DOTTED LINES INDICATE 230V–60Hz CONNECTIONS
3. SEE SEPARATE SHEETS FOR VOLTAGE CHANGE DIAGRAMS
4. REFERENCE DESIGNATOR FOR CONNECTOR IS AS FOLLOWS:

   J1 FOR PS500.
   PL1 FOR UPS500.

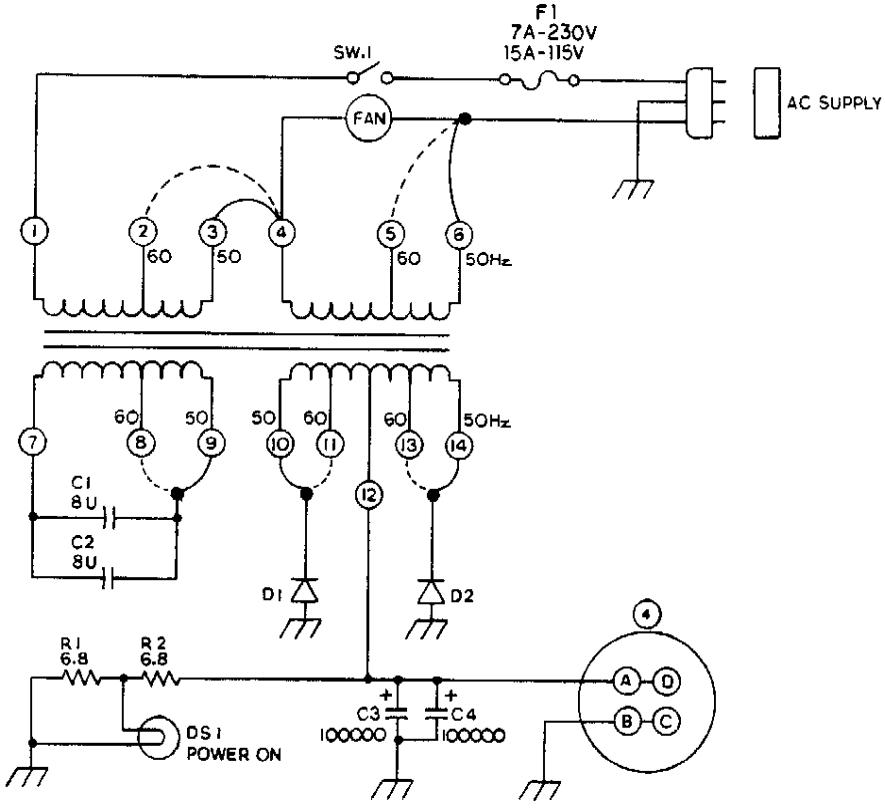

FIGURE 5.
Schematic Diagram - Power Supply, PS500.

TABLE 2.
Parts List, PS500.

C1,C2	280001	Capacitor, 660 Vac Metalcased 8 μF
C3,C4	230104	Capacitor, Electrolytic 30 V 100,000 μF
D1,D2	320104	Diode, 85 A 200 V
F1	550022	Fuse, 15 A (115 V)
	550030	Fuse, 7 A (230 V)
J1	613012	Connector, dc output
R1,R2	161068	Resistor, Wirewound 50 W 6.8 Ω
SW1	530201	Switch, Rocker
T1	410018	Transformer, CVT 28 V

NOTE:

1. CONNECTIONS SHOWN ARE FOR 230V–50Hz SUPPLY
2. DOTTED LINES INDICATE 60Hz CONNECTIONS
3. SEE SEPARATE SHEETS FOR TRANSFORMER CONNECTIONS

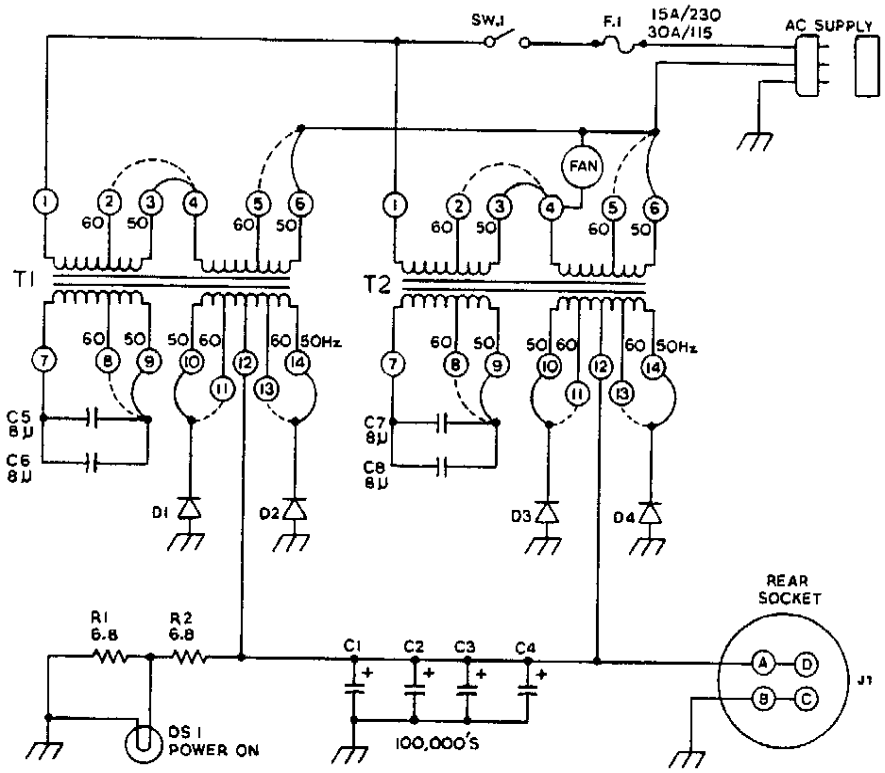

FIGURE 6.
Schematic Diagram - Power Supply, PS1000.

TABLE 3.
Parts List, PS1000.

C1-C4	230104	Capacitor, Electrolytic 30 V 100,000 μF
C5-C8	280001	Capacitor, 660 VAC Metalcased 8 μF
D1-D4	320104	Diode, 85 A 200 V
F1	550021	Fuse 30 A (115 V)
	550022	Fuse 15 A (230 V)
J1	613012	Connector, dc output
R1,R2	161068	Resistor, Wirewound 50 W 6.8 Ω
SW1	530201	Rocker Switch
T1,T2	410018	Transformer CVT 28 V